

BALLISTIC MISSILE DEFENSE SYSTEM TRANSITION AND TRANSFER PROCESS FROM MISSILE DEFENSE AGENCY TO THE ARMY—INNOVATIVE OR DYSFUNCTIONAL?

BY

LIEUTENANT COLONEL SCOTT C. ARMSTRONG
United States Army

DISTRIBUTION STATEMENT A:

Approved for Public Release.
Distribution is Unlimited.

USAWC CLASS OF 2010

This SSCFP is submitted in partial fulfillment of the requirements imposed on Senior Service College Fellows. The views expressed in this student academic research paper are those of the author and do not reflect the official policy or position of the Department of the Army, Department of Defense, or the U.S. Government.



U.S. Army War College, Carlisle Barracks, PA 17013-5050

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.					
1. REPORT DATE (DD-MM-YYYY) 14-04-2010		2. REPORT TYPE Civilian Research Paper		3. DATES COVERED (From - To) August 2009-April 2010	
4. TITLE AND SUBTITLE Ballistic Missile Defense System Transition and Transfer Process from Missile Defense Agency to the Army – Innovative or Dysfunctional?				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) LTC Scott C. Armstrong, U.S. Army				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Institute for Advanced Technology University of Texas at Austin 3925 West Braker Lane, Suite 400 Austin, TX 78759				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) Scott Fish, Program Advisor, Senior Service College Fellowship Program Institute for Advanced Technology University of Texas at Austin 3925 West Braker Lane, Suite 400 Austin, TX 78759				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION / AVAILABILITY STATEMENT DISTRIBUTION A: UNLIMITED					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT In December 2002, President George W. Bush made the defense of the United States, its deployed forces, its friends and its allies against ballistic missile threats his highest priority as Commander in Chief and of his administration. Accordingly, he directed the development and deployment of ballistic missile defenses "at the earliest possible date," including the deployment of an initial limited missile defense capability in 2004. The Missile Defense Agency, the executive agent for ballistic missile defense system (BMDS) development, was already developing several ground, sea, and air-based ballistic missile defense systems. However, to make the 2004 timeline, the Department of Defense (DoD) gave the Missile Defense Agency (MDA) wide-ranging authority and liberal exemptions from many existing DoD acquisition-related processes. The non-traditional development process implemented by the MDA made transfer of ground-based ballistic missile defense systems to the US Army a contentious issue, delaying turnover to the Army. To facilitate progress, the DoD instituted a new process, the Life Cycle Management Process, which includes specific time-phased management responsibilities, including transfer of systems to the Services. The MDA and the Services now operate under this new guidance, although the processes are still maturing. After reviewing the historical framework of United States missile defense development and the current BMDS transition and transfer process, this paper considers the sufficiency and effectiveness of the current process the MDA uses to plan and execute the transition and transfer of missile defense systems to the Army, followed by recommendations for DoD, MDA, and the Army to improve the current process to ensure proper missile defense capability transfer from the MDA to the Army. The research methodology included interviews with senior leadership and staff in the office of the Assistant Secretary of the Army (Acquisition, Logistics and Technology), Army G-3/5/7, and the MDA, in addition to a comprehensive literature review of government and independent documents on BMDS development.					
15. SUBJECT TERMS Life Cycle Management Process, Business Rules					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT UNCLASSIFIED	b. ABSTRACT UNCLASSIFIED	c. THIS PAGE UNCLASSIFIED			Scott Fish, Program Adviser
			UNLIMITED	42	19b. TELEPHONE NUMBER (include area code) 512-232-4446

USAWC CIVILIAN RESEARCH PAPER

**BALLISTIC MISSILE DEFENSE SYSTEM TRANSITION AND
TRANSFER PROCESS FROM MISSILE DEFENSE AGENCY TO
THE ARMY—INNOVATIVE OR DYSFUNCTIONAL?**

by

Lieutenant Colonel Scott C. Armstrong
United States Army

Mr. Scott Fish
Program Advisor
Institute for Advanced Technology
University of Texas at Austin

Disclaimer

The views expressed in the academic research paper are those of the author and do not necessarily reflect the official policy or position of the US Government, the DoD, or any of its agencies.

US Army War College
CARLISLE BARRACKS, PENNSYLVANIA 17013

ABSTRACT

AUTHOR: LTC Scott C. Armstrong

TITLE: Ballistic Missile Defense System Transition and Transfer Process from Missile Defense Agency to the Army—Innovative or Dysfunctional?

FORMAT: Civilian Research Paper

DATE: April 14, 2010 **PAGES:** 42 **WORD COUNT:** 9,597

KEY TERMS: Life Cycle Management Process; Business Rules

CLASSIFICATION: Unclassified

In December 2002, President George W. Bush made the defense of the United States, its deployed forces, its friends and its allies against ballistic missile threats his highest priority as Commander in Chief and of his administration. Accordingly, he directed the development and deployment of ballistic missile defenses “at the earliest possible date,” including the deployment of an initial limited missile defense capability in 2004.¹ The Missile Defense Agency, the executive agent for ballistic missile defense system (BMDS) development, was already developing several ground, sea, and air-based ballistic missile defense systems. However, to make the 2004 timeline, the Department of Defense (DoD) gave the Missile Defense Agency (MDA) wide-ranging authority and liberal exemptions from many existing DoD acquisition-related processes. The non-traditional development process implemented by the MDA made transfer of ground-based ballistic missile defense systems to the US Army a contentious issue, delaying turnover to the Army. To facilitate progress, the DoD instituted a new process, the Life Cycle Management Process, which includes specific time-phased management responsibilities, including transfer of systems to the Services. The MDA and the Services now operate under this new guidance, although the processes are still maturing.

After reviewing the historical framework of United States missile defense development and the current BMDS transition and transfer process, this paper considers the sufficiency and effectiveness of the current process the MDA uses to plan and execute the transition and transfer of missile defense systems to the Army, followed by

recommendations for DoD, MDA, and the Army to improve the current process to ensure proper missile defense capability transfer from the MDA to the Army.

The research methodology included interviews with senior leadership and staff in the office of the Assistant Secretary of the Army (Acquisition, Logistics and Technology), Army G-3/5/7, and the MDA, in addition to a comprehensive literature review of government and independent documents on BMDS development.

TABLE OF CONTENTS

ABSTRACT.....	iii
TABLE OF CONTENTS.....	v
ACKNOWLEDGMENTS	vii
LIST OF ILLUSTRATIONS.....	ix
Ballistic Missile Defense System Transition and Transfer Process from Missile Defense Agency to the Army—Innovative or Dysfunctional?	1
Introduction.....	1
Evolution of US Ballistic Missile Defense System Development.....	2
Origins of US Ballistic Missile Defense	2
Early Ballistic Missile Defense Capability Demonstrations and Deployments	3
“Star Wars” Era.....	4
Establishment of the Missile Defense Agency as a Department of Defense Executive Agency	5
Ballistic Missile Defense System Capability Deployment	8
Evolution of the Over-Arching Ballistic Missile Defense Transition and Transfer Process and Philosophy—2002 to Current	9
Original Ballistic Missile Defense Element Point in Time Transfer Philosophy ...	10
Transition and Transfer Challenges Encountered by the Missile Defense Agency and the Army	10
Evolution of from Point in Time to Incremental Transfer and Life Cycle Partnership Philosophy.....	12
Joint Hybrid Project Management Office Concept Development and Establishment	16
Assessment of the Current Ballistic Missile Defense System Transition and Transfer Process and Philosophy.....	17
Assessment of the Missile Defense Executive Board	18
Assessment of LCMP and Transition and Transfer Business Rules Implementation	18

Assessment of Missile Defense Agency/Service Overarching Memorandum of Agreement and Element Annex Development.....	19
Assessment of the Army’s Joint Hybrid Project Office Initiative	20
Assessment of Acquisition Oversight Improvement.....	20
Recommendations and Conclusion.....	21
Ballistic Missile Defense Subsystem Development and Transition and Transfer Statuses	25
Terminal High Altitude Area Defense Subsystem	25
Army/Navy/Transportable Radar Surveillance Subsystem.....	26
Ground-Based Midcourse Defense Subsystem	26
Phased Array Tracking Radar Intercept on Target Advanced Capability-3 Subsystem.....	27

ACKNOWLEDGMENTS

This paper is the result of the author's Army War College Fellowship at the Institute for Advanced Technology (IAT) at The University of Texas at Austin. I would like to thank the many individuals at the Missile Defense Agency, Assistant Secretary of the Army for Acquisitions Logistics and Technology, Army G-3/5, IAT, and the US Army War College that granted interviews to assist in this research and conducted draft reviews. Additionally, I thank my family for their support and encouragement in this effort.

The views represented in this paper are those of the author and do not necessarily reflect the views of the US Government, the DoD, or the US Army.

LIST OF ILLUSTRATIONS

Figure 1. Integrated Ballistic Missile Defense System.	9
Figure 2. Life Cycle Management Process.	14

BALLISTIC MISSILE DEFENSE SYSTEM TRANSITION AND TRANSFER PROCESS FROM MISSILE DEFENSE AGENCY TO THE ARMY—INNOVATIVE OR DYSFUNCTIONAL?

Introduction

When the Department of Defense (DoD) established the Missile Defense Agency (MDA) in 2002 as the executive agent for Ballistic Missile Defense System (BMDS) development, it gave MDA wide-ranging authority and liberal exemptions from many existing DoD acquisition-related processes. DoD gave these special authorities and exemptions in order to rapidly deploy a limited ballistic missile defense capability to support the President's highest priority as Commander in Chief and the administration's highest overall priority... "defending the American people against these new (ballistic missile) threats."¹ The streamlined, non-traditional development process MDA implemented resulted in communication challenges, reduced sustainment planning, and accelerated timelines, making transition and transfer of these ground-based Ballistic Missile Defense (BMD) systems (referred to as *Elements* by the MDA, and as *Subsystems* by the Army) to the Army a source of contention between the MDA and the Army. Based on the lessons learned by DoD, MDA, Combatant Commands, and the Army, DoD continues to evolve and update the missile defense Element Transition and Transfer philosophy and process. This paper considers the sufficiency and effectiveness of the current process the MDA uses to plan and execute the transition and transfer of missile defense subsystems to the Army. After reviewing the historical framework of United States (US) missile defense development and the current missile defense Element transition and transfer process, this paper recommends areas DoD, MDA, and the Army can improve the current process to ensure proper missile defense capability transfer.

Evolution of US Ballistic Missile Defense System Development

Origins of US Ballistic Missile Defense

The US has been developing missile defense systems since the Nazi's first used ballistic missiles militarily in World War II. BMD programs received varying degrees of priority and fiscal support, depending on technological developments of threat countries, international treaty agreements, and US national security policy. Due to its very nature—cutting edge technologically, extraordinarily expensive, and strategically and politically charged—BMD has always been rather controversial. Accordingly, DoD has treated BMD programs very differently over time, ranging from single Service managed programs to centrally managed DoD level programs rivaling the Manhattan Project in complexity, expense, and national priority. The brief BMD development history below provides a backdrop to place the status of current missile development efforts, including Element transition and transfer status, into context.

US BMD technology research and development (R&D) programs have existed since shortly after the first German V-2 missile struck London on September 8, 1944.² Although inaccurate with a relatively small warhead, the V-2 was an effective terror weapon against populated areas, causing mass panic and chaos, and a sense of helplessness and vulnerability, since there was no defense. The Germans launched more than 3000 V-2s during World War II against Allied targets in Britain, Belgium, France, Luxembourg, and the Netherlands, killing an estimated 7,250 military and civilian personnel.³ The US learned after the war that the Nazis had also completed fabrication of a container to transport V-2s across the Atlantic, towed by snorkel-equipped U-Boats, within striking distance of cities along the US east coast. Germany was also developing a two-stage intercontinental ballistic missile capable of striking US cities, such as New York and Washington DC,⁴ and chemical and biological weapons for use in the V-2 program.³ Within weeks of the war's end, the US Army and the Army Air Forces (USAAF), initiated studies on capabilities to defeat ballistic missile threats. Within months of the atomic bombing of Hiroshima, August 6, 1945, a War Department (predecessor to DoD) board recognized that "intercontinental missiles capable of carrying atomic explosive over a range in excess of 3,000 miles are probable within the

predictable future.”⁵ Accordingly, both the USAAF and the US Army initiated formal missile defense development programs. In 1953, the Soviets also initiated their own anti-ballistic missile (ABM) development program, and US intelligence reports in 1955 indicated an imminent Soviet intercontinental ballistic missile threat. The US Army responded by initiating development of the nuclear-capable Nike Zeus ABM interceptor, intended to destroy an incoming enemy warhead with an airborne nuclear explosion. The Soviet launch of Sputnik in 1957, the world’s first artificial satellite, added additional urgency to US BMD programs. In early 1958, in response to the surprise launch of Sputnik, the Secretary of Defense established the Advanced Research Projects Agency (ARPA), predecessor to the Defense Advanced Research Projects Agency (DARPA), to identify advanced capabilities, including a BMD architecture to counter the projected Soviet intercontinental ballistic missile threat of the 1970s. Also in 1958, in an effort to resolve roles and missions controversy, the Secretary of Defense assigned the US Army primary responsibility for the BMD mission based on its pioneering advances in the development of multistage rockets and spacecraft. Shortly after, the National Security Council also issued a position paper on continental defense that called for “an anti-Intercontinental Ballistic Missile weapons system as a matter of the highest national priority.”⁶ With the Soviets escalating the space race and the US responding with an increase in national priority of missile defense capability, development gained even more momentum.

Early Ballistic Missile Defense Capability Demonstrations and Deployments

In 1961, the Soviets conducted the first intercept and destruction of a missile warhead using a fragmentation warhead at an altitude of 25 kilometers.⁷ In 1962, the Soviets stationed medium and intermediate-range ballistic missiles in Cuba during the Cuban Missile Crisis, threatening the continental US with ballistic missiles for the first time.

That same year the US successfully demonstrated the capability to intercept an incoming warhead using the nuclear-tipped Nike Zeus missile. Although DoD cancelled the Nike Zeus system due to technical and operational shortcomings, it was the foundational design for several subsequent BMD programs, including Nike-X, Sentinel,

and Safeguard, all employing nuclear-tipped interceptors. The nuclear aspect made them highly controversial during the increasingly serious US–Soviet nuclear arms race. Of the three, the US only deployed the Safeguard system. Originally planned to have up to twelve sites to defend silo-based Minuteman Intercontinental Ballistic Missiles, the Safeguard system became an important bargaining chip during negotiation of the Strategic Arms Limitation Talks (SALT) with the Soviets. Eventually, the 1972, Anti-Ballistic Missile Treaty with the Soviets restricted deployment of space, sea-based or mobile anti-ballistic missile systems, and limited the number of fixed missile defense sites to two, further reduced to one in 1974. This significant treaty limited the US deployment of Safeguard to a single site with approximately 100 missiles to defend a single Peacekeeper Intercontinental Ballistic Missile field at Grand Forks Air Force Base, North Dakota. Although it became operational in October 1975, this Safeguard site only remained operational for 5 months. Under congressional pressure, DoD closed it because a Soviet strike could easily overwhelm it, and the detonation of its own nuclear-armed warheads would likely blind its ground radar.⁸ During the same period, the Soviets deployed a similar nuclear-armed system to defend Moscow, the ABM-3. In the 1990s, the Soviets upgraded it to the A-135, which remains operational today, with a reported 100 interceptors, in compliance with the ABM treaty.⁹ The 1976 inactivation of the Grand Forks Safeguard site left the US without any BMD capability against a quickly growing (in quantity and sophistication) Soviet and Chinese threat. The 1980 election of President Ronald Reagan, known as a strategic thinker and visionary, again boosted the priority of missile defense with a dramatic shift in the US nuclear deterrence policy.

“Star Wars” Era

On March 23, 1983, at the urging of the Joint Chiefs of Staff, President Reagan jump-started US BMD development efforts with the announcement of a major new national program to determine if BMD was feasible using space and ground-based technologies. He named it the *Strategic Defense Initiative* (SDI), critically referred to by Senator Edward Kennedy as *Star Wars* the following day.¹⁰ The SDI was an effort to shift away from the national security policy of pure nuclear deterrence and *Mutual Assured Destruction* (MAD) to provide an alternative policy that was defensive in nature.

That same year, leveraging ongoing technological advances, the Army began a series of tests, named the *Homing Overlay Experiment*, and in 1984, demonstrated the capability to intercept a target kinetically (referred to as *hit-to-kill*), exo-atmospherically (outside the earth's atmosphere), rather than with a nuclear explosion. To manage the development of this complex system, DoD established a major new organization, the *Strategic Defense Initiative Organization* (SDIO). With a \$1.4 B budget,¹¹ DoD expanded the overall BMD R&D efforts, consolidated existing missile defense programs from other agencies, and “upped the ante” in the Cold War arms race with the Soviet Union. In 1991, as a result of the fall of the Berlin Wall and the Cold War thaw, President George H.W. Bush announced a shift toward defense against *limited* attacks on the US homeland, and theater defense for deployed combat forces. In 1994, President William J. Clinton renamed SDIO the *Ballistic Missile Defense Organization*, to reflect a shift from intercontinental toward theater missile defense, and indicate a desire to maintain compliance with the Anti-ballistic Missile Treaty.

In 1996, intelligence estimates of a developing new North Korea ballistic missile capability shifted priority back to a strategic missile defense capability. President Clinton, pressured by Congress, signed the National Missile Defense Act of 1999, making it “the policy of the United States to deploy as soon as is technologically possible an effective National Missile Defense system capable of defending the territory of the United States against limited ballistic missile attack (whether accidental, unauthorized or deliberate).”¹² Less than a year after taking office, in December 2001, President George W. Bush announced his intent to withdraw from the Anti-ballistic Missile Treaty, effective June 2002, allowing for the development and actual deployment of strategic BMD systems.¹³ Accordingly, DoD further increased missile defense efforts through organizational changes, and process streamlining initiatives, and an increase in missile defense funding by more than 60%, to \$7.8 B for the 2002 fiscal year (FY), the largest increase since the establishment of the SDIO.¹¹

Establishment of the Missile Defense Agency as a Department of Defense Executive Agency

In December 2002, President Bush made the defense of the US, deployed forces, friends and allies against ballistic missile threats his highest priority as Commander in

Chief, and of his administration. Accordingly, he directed the development and deployment of ballistic missile defenses “at the earliest possible date,” including the deployment of an initial limited missile defense capability in 2004.¹⁴ Consistent with the President’s priority, in January 2002 the Secretary of Defense elevated the BMD mission to a DoD Agency level function by renaming the Ballistic Missile Defense Organization the *Missile Defense Agency*, the name of the agency today, and gave it a new mission:

developing and fielding an integrated, layered Ballistic Missile Defense System to defend the United States, our deployed forces, allies, and friends against all ranges of enemy ballistic missiles in all phases (boost/ascent, midcourse, and terminal) of flight.¹⁵

Additionally, the Secretary of Defense gave MDA wide-ranging authority and latitude in the developmental process to facilitate accelerated missile development efforts for national security reasons:

The special nature of missile defense development, operations, and support calls for non-standard approaches to both acquisition and requirements generation. As a development activity, the MDA will require some expanded responsibility and authority. I therefore direct the following: to rapidly carry out my direction, streamlined executive oversight and reporting will be implemented ... Additionally, to affirm my commitment to rapidly capitalize on promising concepts and promptly adjust program priorities, I request the Deputy Secretary of Defense to ensure that decision-making cycle times are as rapid as possible...I will support additional or revised statutory authority ... to reduce development time and enhance program success. (Secretary of Defense Memo, 2 Jan 02)¹⁹

The most significant organizational and process changes included:

- DoD identified MDA as the DoD Executive Agency for missile defense, empowering the Director of MDA with developmental decision authority (Milestone Decision Authority) normally retained by the Under Secretary of Defense (USD) for Acquisition, Technology, and Logistics (AT&L), for large DoD systems. With milestone decision authority up to, but not including, production decisions for missile defense, this gave the Director of MDA overall development responsibility for all missile defense programs.¹⁶ Accordingly, the Army transferred two BMD systems already in development—*Phased Array Tracking Radar Intercept On Target* (PATRIOT) and *Terminal High Altitude*

Area Defense (THAAD)—to MDA to consolidate and centralized management of BMD development within MDA.

- To reduce the decision making cycle time, DoD provided MDA wide latitude in interpretation and adherence to the management principles and mandatory policies and procedures specified in DoD Directive 5000.01 and DoD Instruction 5000.02 that governs traditional military acquisition programs.
- DoD exempted MDA from the traditional requirements generation process of the Joint Capabilities Integration and Development System (JCIDS), and the Joint Requirements Oversight Council (JROC) processes up to a production decision by the USD (AT&L), upon which it would become subject to the JCIDS and JROC processes.¹⁷ Exempted from DoD's traditional requirements-based development approach (JCIDS), the Agency adopted a *capabilities-based acquisition* approach, intended to enable the rapid fielding of an initial capability while improving the capability over time in blocks, spirals, or increments, as technological improvements become available.
- At the direction of the Secretary of Defense, the USD (AT&L) formed the Missile Defense Support Group (MDSG). The MDSG, chaired by the Director, Strategic and Tactical Systems, advised the Director of MDA on missile defense system program activities. It also advised the Senior Executive Council (SEC), chaired by the Deputy Secretary of Defense, in executive oversight, and decision-making, including recommendations for missile defense system element transfer¹⁸, procurement, and fielding decisions.¹⁹
- DoD authorized the use of *Defense Wide* account funds (rather than Service accounts) and a single appropriation (RDT&E), since MDA programs crossed Service boundaries, even for procurement, military construction (MILCON), and Operation and Support efforts. This provided additional programming, budgeting, and execution flexibility.

DoD intended to facilitate the rapid fielding of missile defense capabilities, consistent with the administration's priority, by implementing these various process-streamlining initiatives. Mr. Paul Wolfowitz, the Deputy Secretary of Defense, stated in October 2003 that the over-arching intent was to, "create an acquisition environment that

fosters efficiency, flexibility, creativity, and innovation.”²⁰ However, these initiatives also shifted the traditional acquisition power and authority from the Military Departments to MDA, creating a rift that continues to impact missile defense development and transfer to the services today.

Ballistic Missile Defense System Capability Deployment

Having withdrawn from the ABM treaty in December, 2002, President Bush issued a new national security policy on ballistic missile defense, directing the Secretary of Defense to “proceed with fielding an initial set of missile defense capabilities” in 2004, giving MDA less than two years to field a capability.¹⁴ Only the long-range, Ground-Based Midcourse Defense (GMD) (formerly the *National Missile Defense*) and the short-to-intermediate range, sea-based Aegis BMD/Standard Missile-3 (SM-3) programs were mature enough to field that quickly. (The Army had already fielded the short range PATRIOT PAC-3 system.) By the end of 2004, MDA successfully deployed five GMD interceptors to Fort Greely, Alaska, and Aegis (BMD) took delivery of its first SM-3 missile,²¹ successfully providing a limited defensive capability against a potential rogue nation threat, principally North Korea. MDA continues extensive missile defense system development activities for sea, air, and land-based systems to counter the constantly growing threat of ballistic missile use by rogue nations, potentially armed with weapons of mass destruction. Since 1980, DoD invested approximately \$132 B in missile defense system R&D, and it continues to be one of DoD’s most expensive and technologically challenging programs.¹¹

MDA’s current portfolio of missile defense system Elements, shown by phase of ballistic missile flight, is shown in Figure 1.



THE BALLISTIC MISSILE DEFENSE SYSTEM. The U.S. BMDs is composed of integrated land-, sea-, air- and space-based sensors and "shooters" capable of intercepting a range of ballistic missile threats in various stages of flight.

Figure 1. Integrated Ballistic Missile Defense System.³⁸

DoD designated the Army as *Lead Service* for the four missile-defense Elements. MDA transferred PATRIOT Advanced Capability-3 (PAC-3) to the Army in 2003. MDA manages Terminal High Altitude Area Defense (THAAD), Ground-Based Midcourse Defense (GMD), and the Forward Based Radar (AN/TPY-2). MDA has identified these systems for eventual transfer to the Army for operations and support. However, due to the nature of the MDA non-traditional development process, the transfer of these systems to the Army encountered numerous challenges, resulting in the modification of the transfer process over time. MDA plans to transfer the other Elements to the Air Force or Navy.

Evolution of the Over-Arching Ballistic Missile Defense Transition and Transfer Process and Philosophy—2002 to Current

When the Secretary of Defense established MDA in 2002, and authorized use of a non-traditional acquisition process, he established the transfer of missile defense system elements as an event that occurred at a specific, discreet, *Point in Time*. Since then, based on the harsh realities of lessons learned during planning for Element transfers, DoD, MDA, and the Services have updated the missile defense system Element transition and

transfer process to an *Incremental Transfer and Life Cycle Partnership* philosophy, a more collaborative approach intended to improve the readiness of the Element to transfer from MDA to the Service.

Original Ballistic Missile Defense Element Point in Time Transfer Philosophy

In 2002, the Secretary of Defense identified three primary phases of Ballistic Missile Defense System management: 1) *Development*, 2) *Transition*, and 3) *Procurement and Operations*. DoD identified MDA as responsible for management of the missile defense system Development and Transition Phases, including approval authority to move to the Transition Phase, which would occur when DoD identified a Lead Service for that missile defense system element. During the Transition Phase, MDA, working with the Services, was to develop transition plans (to include resources, contracting, personnel, and facilities) for missile defense system Elements to transfer from MDA to the Services. MDA was also to baseline the technical capability and configuration. The Services were also to develop and present a JCIDs required Capability Production Document (CPD), justifying readiness to enter the Production Phase, to the Joint Requirements Oversight Council (JROC) for approval. The program would transfer to the Service upon meeting specific criteria established during the Transition Phase, with approval of the USD (AT&L). The Service would assume complete responsibility of management during the Procurement Phase, including programming, budgeting, and force structure to field, operate, and support the system. MDA maintained indefinite responsibility to fund and manage Research, Development, Test, and Evaluation (RDT&E) and Developmental Testing and Evaluation (DT&E) activities for new missile defense capabilities and modifications to transferred elements.²² DoD intended this *Point in Time Transfer* philosophy to establish a clean transfer of responsibilities from MDA to the Services.

Transition and Transfer Challenges Encountered by the Missile Defense Agency and the Army

MDA and the Army learned over several years that transferring such complex and expensive systems at a single *Point in Time* from MDA to the Army was a prohibitively difficult and ineffective approach for various reasons. First, there remained a general

distrust and parochial attitudes between MDA and the Army, a legacy of activities that occurred during DoD's establishment of MDA. Two ballistic missile defense development programs, previously managed entirely by the Air Defense Branch of the Army (PATRIOT PAC-3 and THAAD), transferred in total to MDA for continued development, including the associated funding, with the establishment of MDA. This significantly impacted the Army's Air Defense Branch, which had begun a deliberate migration of its core capability from an air defense role to missile defense. With its two largest missile defense development programs transferred to MDA, the Army's influence on planning and developmental decisions was severely impacted, with the future of the branch subject to MDA decisions.

Second, the same streamlined authorities the Secretary of Defense vested in MDA to expedite missile defense system development activities caused the Army to feel that it had insufficient influence during the early phases of development for Elements that would eventually transfer to the Army. Since DoD authorized MDA to operate outside the traditional JCIDS-requirements-based process and empowered the Director of MDA as the Milestone Decision Authority up to a production decision, the Army felt that MDA had an insular view of development. The Army perceived that MDA focused primarily on technical performance and rapid capability fielding, at the expense of other planning requirements such as warfighting doctrine development, manning, and procurement, operations and support (O&S) programming and budgeting. As a result, the Army felt that MDA was not adequately addressing many of the requirements of the traditional JCIDS and DoD 5000 series governed acquisition processes through its MDSG-based process.

Third, since DoD authorized MDA to use a single defense-wide appropriation (RDT&E), program dollars were essentially fungible. This resourcing flexibility, intended to reduce program risk at the missile defense system portfolio level, resulted in a lack of fidelity in cost estimation by appropriation traceability. Accordingly, MDA impacted the availability of dollars intended for use in Procurement and Operations and Sustainment (O&S) funding when it reallocated dollars to support ongoing RDT&E efforts. This lack of accountability and transparency by appropriation made the Army leery of accepting responsibility in resourcing procurement or operations and support and

was a key criticism of the Government Accounting Office in many of its reports on the missile defense system program.

Finally, in an effort to tightly synchronize and manage the entire nation's missile defense system development efforts and maintain the necessarily strict system engineering architecture, MDA developed a generally *close hold*, information restrictive, culture. This lack of transparency by MDA made it difficult for the Army to obtain timely data, detailed program planning information or status, or to influence MDA's decisions.

Evolution of from Point in Time to Incremental Transfer and Life Cycle Partnership Philosophy

After extensive debate between DoD, MDA, and the Services about the readiness, timing, and criteria of the Services to receive elements from MDA, and a general lack of progress on transition planning (highlighted by the Army's experience), DoD determined that the *Point in Time Transfer* philosophy was not practical or executable and that more substantial process changes were required to improve collaboration to achieve additional progress and facilitate transfer. As a result, the Deputy Secretary of Defense made two significant policy changes: 1) establishment of the *Missile Defense Executive Board*, 2) institution of the *Life Cycle Management Process*.

DoD Establishes Missile Defense Executive Board to Increase Oversight and Collaboration

In March 2007, the Deputy Secretary of Defense replaced the Missile Defense Support Group with a more powerful advisory board, the Missile Defense Executive Board (MDEB), chaired by the USD (AT&L). The Executive Board reports directly to the Deputy Secretary of Defense, and operates independently from the DoD Senior Executive Committee (SEC) for all missile defense system program activities. The Executive Board also has broader stakeholder involvement than the previous support group, with new board members including the Chairman of the Joint Chiefs of Staff (CJCS), instead of the VCJCS, the Combatant Command Commanders, and Directors of the Defense Agencies. In the memorandum establishing the MDEB, the Deputy Secretary of Defense stated:

This Board will enhance the department's decision-making process by improving information flow among key stakeholders: MDA, the Military Departments, OUSD, the Joint Staff, the Combatant Commanders, other DoD Components, and the national security and intelligence communities.²³

As the senior deliberative body on missile defense affairs, the Executive Board responsibilities include:²³

- Provide the USD (AT&L), or Deputy Secretary of Defense, as necessary, recommended strategic program plan and feasible funding strategy for approval.
- Review and exercise oversight by making recommendations to the USD (AT&L) and Director, MDA”
- Meet bi-monthly (at a minimum)
- Establish four specified standing committees:
 - Policy Oversight
 - Operational Forces
 - Test and Evaluation
 - Program, Acquisition, and Budget Development Committee

Of particular interest to this research, the Program, Acquisition, and Budget Development Committee: 1) oversees implementation of the missile defense acquisition guidance to include transition and transfer of responsibilities/authorities of the missile defense system from MDA to the Services; 2) provides oversight for ballistic missile defense system procurement, operation, and support.”²³

Establishment of the Ballistic Missile Defense System Life Cycle Management Process, Including Transition and Transfer Business Rules

Still struggling to make progress in missile defense Element transfer planning, the Deputy Secretary of Defense also sought to improve overall missile defense stakeholder collaboration by addressing two key overarching issues: 1) the specific roles and authorities of the Military Departments in missile defense development (including transition and transfer); and 2) the administration of defense-wide resources. In September 2008, the Deputy Secretary of Defense provided additional guidance, establishing the *BMDS Life Cycle Management Process* (LCMP). Its primary purpose is to:

synchronize the MDA budget process with DoDs annual resource planning cycle and provides an opportunity for the Office of the Secretary of Defense (OSD), the Military Departments, and COCOMs to identify capabilities and operation and support requirements and to influence the Ballistic Missile Defense System annual budget formulation and program plan to ensure resources are available for development, fielding and sustainment.²⁴

In essence, in LCMP, the Deputy Secretary of Defense formalized and institutionalized the streamlined and tailored missile defense development, oversight, and decision making process that had been authorized by the Secretary of Defense in 2002.

Figure 2 graphically depicts the missile defense LCMP.

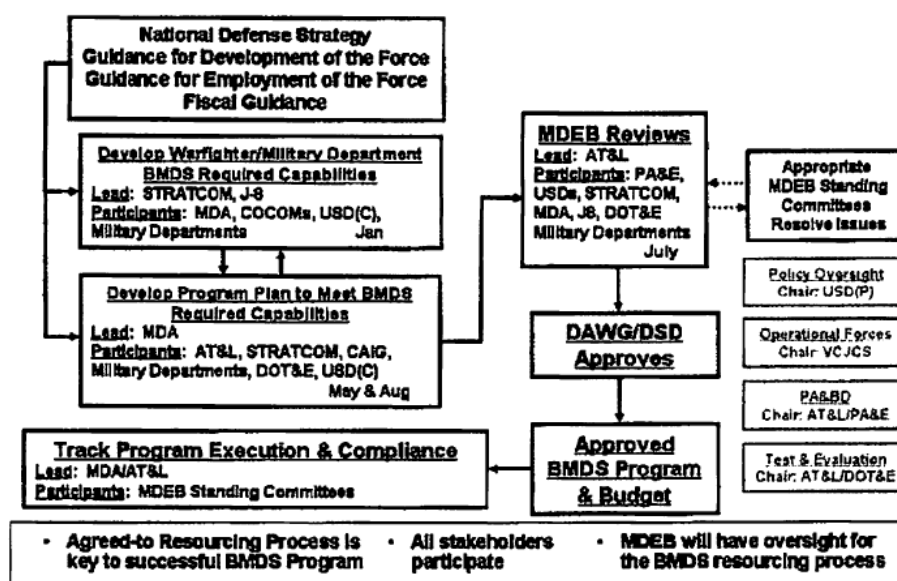


Figure 2. Life Cycle Management Process.²⁵

In a statement before the House Armed Services Subcommittee on Strategic Forces, Mr. David Ahern, Director Portfolio System Acquisition, Office of the USD (AT&L), summarized the purpose of the LCMP:

One of the key challenges associated with transition and transfer is early lead Service involvement, which develops understanding and confidence in operation and support planning and budgeting, and realistic scheduling to execute plans. The BMDS LCMP establishes responsibilities and expectations for the Services and MDA relative to resources, decision authority, program management, and testing. It involves joint planning by MDA and the Military Departments for fielding BMDS elements and their operational support and will facilitate the transition and transfer process from MDA element development to Military

Department operation and support. As BMDS elements are fielded, Military Departments participation in BMDS operations is of increasing importance.²⁶

As part of the LCMP, the Deputy Secretary of Defense established *BMDS Business Rules* that explicitly define stakeholder authorities and responsibilities, regarding missile defense resources, decision authority, program management, and testing, to facilitate the transition and transfer process of missile defense elements from MDA to the Military Departments. Significantly, under the LCMP, DoD resources ballistic missile defense with four appropriations: RDT&E, MILCON, Procurement, and O&M, all from the defense-wide account. Also, to further define transition and transfer responsibilities, the LCMP identified the need to develop memorandums of agreement (MOAs) between the MDA and the Military Departments and missile defense subsystem level MOAs, subsequently identified as Annexes to the MOA. Additionally, DoD formally established an issue resolution path: 1) MDA/Military Department Board of Directors, 2) Missile Defense Executive Board and its standing committees, 3) Joint Requirements Oversight Council or the Deputy's Advisory Working Group. The establishment of LCMP was a significant process change to enhance early Service involvement and provide influence in the missile defense process.

Development of Overarching Memorandum of Agreements and Element Annexes

With the establishment of the LCMP, MDA and the Services began jointly drafting Overarching MOAs to outline “overarching policy and guidelines for the definition, documentation, management, and execution of transition and transfer of missile defense elements.” The MOA also documents top level conditions agreeable to MDA and the Army to transfer responsibilities and authorities. The development of these MOAs proved to be more difficult than anticipated, since it forced resolution of many issues prior to agreement ratification. However, in January 2009, after sixteen months, the Director of MDA and the Secretary of the Army signed the first MOA.

In addition to the MDA/Service MOAs, each missile defense Element/Subsystem pending transfer would have its own annex to the overarching MOA, with Element/Subsystem specific transition and transfer details complying with the BMDS LCMP business rules. The Element annexes establish specific, event-driven transfer

criteria for functions the Army will assume, implementing the incremental approach to the handover of responsibility, with each function completed independently. Upon completion of all criteria for each function, the Project Office will brief the Army-MDA Board of Directors for concurrence. Upon transfer of the last planned function transfer, the Board of Directors will notify the Executive Board of Element transfer completion.

With the MOA signed, MDA and the Army initiated work on the subordinate annexes for missile defense subsystems already identified for transition and transfer to the Army: THAAD, GMD, and AN/TPY-2 (FBM) radars. The Army will update the annexes at least annually to reflect progress and revise agreements and will form the basis for the USD (AT&L) Annual Report to Congress on the status of missile defense element transitions to the military departments, as directed in the 2007 National Defense Authorization Act.²⁷

Joint Hybrid Project Management Office Concept Development and Establishment

During this same period, the Army and MDA jointly developed a concept to establish *Joint Hybrid Project Management Offices*, integrating Army expertise (primarily operations and sustainment) into the established MDA project management offices to foster collaborative management throughout their life cycle, particularly to improve the MDA/Army transition and incremental transfer planning process.²⁸

Once ... approved by the Deputy Secretary of Defense, the physical accountability and control of missile defense units, operations and support, and infrastructure responsibilities transfer to the lead Service. Research, development, manufacturing, and testing activities remain the responsibility of MDA after a BMDS element capability has been transferred to a lead Service. Accordingly, “hybrid” program offices, consisting of organizations reporting to either MDA or the lead Services will be formed to execute this division of responsibilities.²⁹

To facilitate the establishment of these Joint Hybrid Project Management Offices, the Assistant Secretary of the Army (ASA) for Acquisition, Logistics, and Technology (ALT) identified a Colonel to serve as the *Army BMDS Cell Manager*, with a small staff to provide leadership in coordination/approval of the necessary resources, manning, and functions required to stand them up in each of the three MDA project offices with missile defense subsystems pending transfer to the Army, and provide enduring life-cycle

management support coordination with MDA. The Assistant Secretary of the Army also gave him the responsibility to facilitate coordination of the overarching MOA annexes. Each Subsystem transition and transfer annex will contain the initial Joint Hybrid Project Office construct. Proposals currently in staffing would establish varying numbers of Army personnel within the GMD, THAAD, and AN/TPY-2 Joint Hybrid Program Offices.³⁰

Over the last 8 years, DoD, MDA, and the Services worked hard to figure out the complexities of smoothly transferring missile defense subsystems, developed in a non-traditional manner, into the world of traditional system operations and sustainment by the Services. In particular, DoD, MDA, and the Army have tried to shift the paradigm from a *Point in Time* to an *Incremental Transfer and Life Cycle Partnership* philosophy to improve collaboration throughout the development lifecycle and facilitate transition and transfer to the Army. However, only time will tell if the recently enacted initiatives (assessed in the next section) will greatly improve the transfer process.

Assessment of the Current Ballistic Missile Defense System Transition and Transfer Process and Philosophy

As with any large, complex, bureaucratic organization, significant changes within DoD take time to fully implement. Although the Deputy Secretary of Defense established the Executive Board in March 2007, and the BMDS LCMP in September 2008, the drafting of detailed guidance, staffing, dissemination, and implementation across DoD, MDA, and the Services took time. In fact, DoD just updated Directive 5134.09, which governs the MDA, to incorporate the Executive Board and LCMP guidance in September 2009. Given less than two years of experience with implementation of the Executive Board and LCMP processes, it may be too early to assess whether it reflects progress toward the Deputy Secretary of Defense's goals of achieving a fundamental improvement in the collaboration of the Services with MDA on missile defense development activities and their preparedness to ultimately receive, operate and sustain capabilities fielded by MDA. However, there are some initial indicators, anecdotal evidence, and preliminary feedback regarding the sufficiency and effectiveness of these changes.

Assessment of the Missile Defense Executive Board

Congressional testimony by senior DoD officials and feedback from MDA and the Services indicates that the replacement of the ineffective Missile Defense Support Group (MDSG) with the Executive Board and its subordinate committees has improved DoDs management oversight of MDA, and improved the level of collaboration by the key stakeholders, DoD, MDA, and the Army. The Executive Board's four committees have provided an additional forum for issue consideration and resolution among the stakeholders, prior to being elevated to the Executive Board for USD (AT&L) decision. The Executive Board has been relatively active, having met sixteen times since its inception³¹ and the USD (AT&L) issued at least five Acquisition Decision Memorandums.³² As an example, the Executive Board conducted a comprehensive and detailed pre-production review of the THAAD program to determine the maturity of the program and readiness for operation and support by the Army, authorizing near term contract actions for procurement of long lead items for THAAD Batteries after collaborative discussion between MDA and the Army. The Executive Board also reviewed and endorsed criteria for production related missile defense element reviews, giving stakeholders clear guidance for future USD (AT&L) production decisions. The Executive Board was also involved in the development of the MDA FY 2010 and 2011 budgets, as directed in the LCMP, articulating resource priorities and endorsing the budget prior to review by the Deputy Secretary.³³ Initial indicators support the role and effectiveness of the Executive Board to facilitate broad stakeholder involvement and consideration during the missile defense senior decision making process.

Assessment of LCMP and Transition and Transfer Business Rules Implementation

The LCMP, as envisioned by the Deputy Secretary of Defense, appears to be taking root, playing a significant role in the improved level of collaboration by stakeholders in missile defense program planning and budgeting, and improved planning of transition of operation and support responsibilities to the Services. The DoD implemented LCMP on a trial basis during FY 2010 budget preparation and fully implemented it for the FY 2011 budget submission, with the Military Departments providing their requirements to support MDA-developed programs.³⁴ Program planning

within the LCMP has also matured enough to support budgeting for the use of defense-wide funds using four appropriations (RDT&E, Procurement, O&M, and MILCON), as required by the FY 2008 National Defense Authorization Act starting in 2010.³⁵ The FY 2010 budget submission included three of these appropriations, and MDA will request O&M beginning in FY 2012 to support the Army's fielded THAAD units.³⁶ The use of four appropriations for programming and budgeting will encourage more accurate cost estimation and provide the services with higher confidence that operations and support requirements will be met after transfer. The general consensus of the stakeholders seems to indicate that the implementation of LCMP has improved their ability to influence missile defense resource prioritization, planning, execution, and decision-making, ensuring their requirements are properly addressed. LCMP has also jump-started the transition and transfer process, providing the necessary responsibility and authority guidance for MDA and the Army to conduct serious and productive discussions and make progress on drafting the MOA annexes.

Assessment of Missile Defense Agency/Service Overarching Memorandum of Agreement and Element Annex Development

The January 2009 signature of the MDA/Army Overarching Transition and Transfer MOA was a significant achievement for the two organizations, establishing a common framework from which they are collaborating on the specific element level transition and transfer MOAs. With the THAAD transition and transfer MOA annex having completed DoD, MDA, and Army-wide staffing, the fact that only several issues remain for resolution is a testament to the hard work and cooperation of all the stakeholders; a vast improvement over largely unproductive transition and transfer discussions prior to LCMP establishment. The initial establishment and agreement on specific functional areas and their specific transfer criteria were the crux of the issue. The collaborative development of the MOA annex forced resolution of many contentious development and fielding issues, which previously had been irresolvable. With MDA currently fielding THAAD batteries, completion of the THAAD Annex by MDA and the Army was of urgent necessity to ensure the transfer from MDA to the Army will be smoothly conducted. THAAD has prototyped the MOA annex development process, which should set precedent for the on-going drafting and negotiation of the AN/TPY-2

and GMD MOA annexes. Additionally, the annual MDEB review of MOAs and transition and transfer status in preparation for the submission of the transition and transfer congressional report will keep pressure on MDA and the Army to make progress on the specific transfer criteria and transfer of complete functions over time.

Assessment of the Army's Joint Hybrid Project Office Initiative

The establishment of the Joint Hybrid Project Offices may be the most significant MDA/Army initiative to foster the collaborative life cycle partnership environment required to facilitate effective transition and transfer. Although none have been formally activated to date, the Army and MDA have completed formal coordination, with only several issues remaining for resolution at the Director, MDA, and ASA (AL&T) level. Joint approval by MDA and the Army is anticipated in the near-term. Although Army and MDA personnel in the offices will be responsible to, and be rated by, their respective organizational chains of command, having Army and MDA personnel physically co-located, working side-by-side daily, should significantly reduce the parochialism and stove-piping that currently challenges the missile defense subsystems. The Joint Hybrid Project Offices will also more effectively facilitate the Army's inclusion in the LCMP for resource programming, planning, and budgeting, and initiate issue resolution through the Army/MDA Board of Directors to ensure adequate representation of the Service's interests.

Assessment of Acquisition Oversight Improvement

One of the primary criticisms of MDA by Congress and the Army has been the perceived lack of acquisition process oversight since MDA was exempted from the traditional JCIDS requirements process and the DoD milestone-based acquisition process. MDA instead developed and uses a capability-based acquisition process. However, after continued congressional scrutiny and the passage of the Acquisition Reform Act of 2009, during congressional testimony in June 2009, the Director of MDA committed to "implementing milestone review and baseline reporting processes that are closely aligned with the principles of DoDI 5000."³⁷ Although he intends to invoke his previously authorized Milestone Decision Authority (MDA) for milestone "A" and "B"-like

decisions, and is still required to obtain USD (AT&L) approval for a milestone “C” decision (Production), developing acquisition strategies and program plans using traditional DoD practices should provide additional rigor and higher level of compliance with existing DoD policies for MDA programs in development. This will reduce the “gaps” when the system enters the Transition Phase, and approaches a Production decision and transfer to the Army. All three systems in Transition status for transfer to the Army, however, are beyond milestone “B” and will only benefit from application of a milestone “C”-like (Production) decision. This initiative will most benefit technology currently in early stages of development. This application of a milestone-like review process, in addition to the active role of the Executive Board, will likely enhance the oversight provided by DoD and MDA during the missile defense development lifecycle.

It may be too early in the implementation of these sweeping institutional process changes to accurately assess whether they will result in a long-lasting, fundamental change in the way MDA and the Army collaborate on missile defense development and transition and transfer planning activities. This initial assessment, however, indicates that MDA and the Army have made significant progress and the initiatives seem to be gaining buy-in and momentum. The following recommendations would further improve the missile defense subsystem transfer process.

Recommendations and Conclusion

DoD, MDA, and the Army should continue implementation of the recent initiatives to increase MDA/Army collaboration throughout the developmental lifecycle: Life Cycle Management Process, Transition and Transfer Business Rules, subsystem transition and transfer annexes, Joint Hybrid Project Offices, and a formal milestone review process. However, based on my research, I recommend the following additional initiatives to improve DoD/MDA/Army collaboration and the Army’s preparedness to receive systems from MDA and assume of Title 10 operations and support responsibilities after transfer.

- **Executive Board Conduct Annual Life Cycle Management Process Review:**
DoD/Deputy Secretary of Defense establish an annual requirement for all missile defense stakeholders (i.e., MDA, Services, Combatant Commands, the Joint Staff,

other DoD Components, etc.) to provide recommended Life Cycle Management Process/Transition and Transfer Business Rules changes to the Executive Board. DoD could accomplish this by requiring input in conjunction with the annual submittal of the congressionally mandated Element transition and transfer status update, encouraging continuous and collaborative process improvement.

- **Establish a Joint BMDS Management Cell:** The Army and MDA should convert the current Army BMDS Management Cell into a *Joint BMDS Management Cell*, mirroring the Joint Hybrid Project Office initiative, to synchronize transition and transfer management support for the three missile defense subsystems pending transfer to the Army (and any future subsystems upon Army being identified as the Lead Service). It would consist of three co-located sub-cells: 1) ASA (AL&T) sub-cell; 2) MDA sub-cell, 3) Aviation and Missile Command (AMCOM) Lifecycle Management Center (LCMC) sub-cell. Each sub-cell, led by a Colonel (O-6)/civilian equivalent, would report to and be rated by their respective organizations. The co-located *Joint BMDS Management Cell* would form a dedicated bridge between the Army Secretariat, MDA, and the Army LCMC, serving as missile defense champion for all matters concerning subsystem transition and transfer to enhance lifecycle management planning within their respective organizations. Although both ASA(AL&T) and MDA have already established an office with this function, and LCMC is in the process of establishing one, there is currently no plan to co-locate staffs like the Joint Hybrid Project Management Office concept. Co-location would add additional organizational synergy and foster the collaborative environment for an effective Life Cycle Partnership.
- **Establish Army and MDA Deputy Project Manager for Transition and Transfer Positions:** Establish two Lieutenant Colonel (O-5)/civilian equivalent level Deputy PM (DPM) for Transition and Transfer positions (one MDA/one Army) within each of the Joint Hybrid Program Offices to provide additional support in all aspects of transition and transfer. Their primary focus would be coordination with their respective sub-cell Director in the *Joint BMDS Management Cell* for

the coordination, negotiation, and staffing of the missile defense Subsystem transition and transfer annexes within their respective organizations, the execution of those functions as specified in the subsystem annex, and on-going collaborative program planning in the Life Cycle Management Process. The Deputies would also be responsible to coordinate and cue up transition and transfer issues for resolution/topics for discussion or approval at the MDA/Army Board of Director meetings.

- **Initiate a Study to Assess Possible Incorporation of JCIDS Aspects Into the Life Cycle Management Process:** DoD initiate an *independent* study to assess what aspects of the traditional JCIDS requirements process or DoD 5000 series could be incorporated into the MDA capability-based development process to improve DoD oversight, improve collaboration across DoD, MDA, Combatant Commands, and the Services, and standardize the process where possible, while maintaining its streamlined nature. Although the recently released DoD Ballistic Missile Defense Review concluded that “there would be no benefit in bringing MDA into JCIDS or the full DoD 5000 acquisition reporting process at this time”,³⁸ and MDA and the Army are working to make MDA more consistent with DoD 5000, an independent study would likely be more effective at identifying critical areas requiring standardization with the rest of DoD’s development process.
- **Army Establish a Special Assistant for BMDS to the ASA (AL&T):** The Army should establish a Special Assistant (BMDS) to the Assistant Secretary of the Army (AL&T), at the General Officer level, or designate Program Executive Officer Missile and Space, as the focal point for Army missile defense Subsystem Life Cycle Management planning/transition and transfer activities, to improve executive level Army/MDA Life Cycle Management communication and coordination.

In the seven years since President George W. Bush made defense against ballistic missile threats his highest priority and directed the development and deployment of ballistic missile defenses “at the earliest possible date,”¹⁴ the MDA has made incredible technological advances and successfully fielded an initial limited missile defense capability, including Aegis BMD, GMD, and AN/TPY-2. THAAD continued

development and is currently being fielded to the Army. However, MDA's wide-ranging authority, liberal exemptions from many existing DoD acquisition-related processes, and the streamlined, non-traditional development process limited the involvement of the Army in developmental resource planning, decision making, and preparation for receipt of the systems from MDA and assumption of Title 10 responsibilities after transfer. As a result, the innovative MDA development process had made the transition and transfer process dysfunctional, resulting in little to no progress in related agreements or activities.

Recent policy initiatives, specifically the establishment of the Executive Board, the implementation of the LCMP and Transition and Transfer Business Rules, and the drafting of the Overarching MOA and Subsystem annexes appear to have improved collaboration between MDA and the Army. The emerging initiatives to establish of MDA/Army Joint Hybrid Project Offices and a milestone review process throughout the missile defense development lifecycle also hold promise in fostering a collaborative MDA/Army lifecycle partnership, ultimately improving the Army's ability to operate and sustain the system after transfer from MDA. However, DoD, MDA, and the Army must aggressively pursue full implementation of the recent initiatives and consider implementation of the recommendations:

- Executive Board conducts annual LCMP review
- Establish a Joint BMDS Management Cell
- Establish Army and MDA Deputy Project Manager for Transition and Transfer Positions
- Initiate an Independent Study to Assess Possible Incorporation of JCIDS Aspects into the Life Cycle Management Process
- Army establishes a Special Assistant for BMDS to the ASA (AL&T)

These changes hold promise for DoD to achieve the desired paradigm shift: away from a MDA-centric development process with a *Point-in-Time Transfer* of BMDS subsystems, to a *Life Cycle Partnership with Incremental Transfer* of system responsibilities. This would: 1) more effectively leverage MDA's innovative development process, 2) facilitate the more rapid and effective transfer of missile defense capabilities to the Army to defend the United States, our deployed forces, allies, and friends, against an ever-growing ballistic missile threat.

Annex A

Ballistic Missile Defense Subsystem Development and Transition and Transfer Statuses

There are currently 3 missile defense subsystems in transition and eligible for transfer of Operations and Sustainment to the Army: 1) Terminal High Altitude Area Defense (THAAD), 2) Army/Navy Transportable Radar Surveillance (AN/TPY-2), 3) Ground-Based Midcourse Defense (GMD). A fourth missile defense element, the PATRIOT Advanced Capability-3 (PAC-3) system already transferred to the Army in 2003.³⁹ Element status varies and is discussed in the following summaries below.

Terminal High Altitude Area Defense Subsystem

The THAAD element is a globally transportable, rapidly deployable capability to intercept and destroy short or medium range ballistic missiles both inside (endo-atmospheric) or just outside the atmosphere (exo-atmospheric), during their terminal phase of flight. MDA is continuing development activities to incrementally improve missile defense capability. Two THAAD batteries have been activated at Ft. Bliss, TX, with equipment fielding and soldier training and certification on-going, with the first battery planning to be operational in 2010.⁴⁰

THAAD is currently in the transition phase. DoD designated the Army as lead service on November 20th, 2006. The THAAD annex to the US Army/MDA overarching MOA is the first annex drafted under the missile defense LCMP and reflects the incremental program transfer philosophy. Generally, MDA is remaining responsible for the management of all missile defense development, testing, and procurement for THAAD. The Army is responsible for leading the collaborative O&S planning: management of Operations and Maintenance accounts; execution of sustainment activities; and for the development of doctrinal products and procedures, organizational structure, training, leader development, personnel manning, and facilities. Because the Army has been highly involved throughout the development of the THAAD system, the program has largely adhered to the Army's traditional developmental process and is relatively well prepared to transfer specific functions to the Army in the near-term. An Army Material Fielding Review is anticipated in FY 2010, a significant step toward final

transfer to the Army.⁴¹ The annex is in final staffing, to be followed by Army/MDA Board of Director's approval.

Army/Navy/Transportable Radar Surveillance Subsystem

The AN/TPY-2 is globally transportable, rapidly deployable X-band high resolution phased array radar designed specifically for ballistic missile defense. It is capable of acquiring, tracking, discriminating, classifying, identifying, and estimating the trajectory parameters of all classes of threat missiles and missile components and transmits the data to other missile defense elements or the THAAD weapon system. MDA is continuing incremental development activities to improve its capability. Six AN/TPY-2 radars have been produced, with two currently deployed in support of US allies. A total of nine radars are planned.⁴²

AN/TPY-2 is currently in the transition phase. DoD designated the Army as lead service on February 11, 2006. Prior to an internal reorganization of MDA, the AN/TPY-2 radar was actually managed by the THAAD project office. Therefore, similar to THAAD, the Army has been highly involved throughout the development of the radar and it is relatively well prepared to transfer specific functions to the Army in the near-term. The AN/TPY-2 transition and transfer annex to the US Army/MDA overarching MOA is in initial draft form and will also reflect the incremental program transfer philosophy.

Ground-Based Midcourse Defense Subsystem

The mission of the Ground-Based Midcourse Defense (GMD) element of the BMDS is to defend the US, our deployed military forces, and friends and allies against a limited attack by intermediate and long-range ballistic missiles. It uses multiple sensors, communications systems, and interceptor missiles to detect, track, and destroy threat ballistic missiles during the midcourse phase of flight outside the atmosphere (exo-atmospherically). It is a fixed site system, with up to thirty hit-to-kill interceptor missiles at Fort Greely, Alaska, and Vandenberg Air Force Base, California, and fire control centers in Colorado and Alaska.⁴³

GMD is currently in the transition phase. DoD designated the Army as lead service on November 20, 2006. MDA currently manages all aspects of GMD system

development, testing, and sustainment. To date, the Army has accepted responsibility of doctrine development and operator training. However, because MDA is continuing development and testing of the configuration and baseline, it is expected that GMD will remain in transition for the foreseeable future. Additionally, its development history adds significant complexity to transition from MDA to the Army. Because it was initially as a missile defense “test bed” program, hastily deployed to provide “limited defensive operations” in 2004, many aspects of the system were developed without serious consideration for long-term operations and support. The Army has been reluctant to assume responsibility for operations and sustainment of a one-of-a-kind, extraordinarily expensive system, concerned that it may be under-resourced, putting other Army programs at risk. The GMD annex to the US Army/MDA Overarching MOA is currently being drafted with the incremental transfer approach by function, however, several criteria are expected to prohibit full transfer to the Army in the near term, such as: 1) stable and mature configuration and baseline, 2) completed Military Utility Assessment (MUA) establishes the suitability of GMD for Full Mission Capability (FMC), 3) establishment of long-term affordability and sustainability, 4) achievement of the Army’s full materiel release status, IAW DA PAM 700-142, “Materiel Release, Fielding and Transfer”. GMD may not transfer operations until the 2020–2030 timeframe, after the conduct of a Materiel Release Board.

Phased Array Tracking Radar Intercept on Target Advanced Capability-3 Subsystem

The PATRIOT PAC-3 is a globally transportable, rapidly deployable system that provides simultaneous air and missile defense capabilities as the Lower Tier element in defense of US deployed forces and allies, providing an integrated, overlapping defense with the THAAD system against missile threats in the terminal phase of flight. It is the most mature hit-to-kill weapon system of the missile defense system. Although developed initially by the Army in the 1970s and 1980s solely as an air defense weapon system, it has been upgraded several times to provide a BMD capability. PAC-3, the most advanced missile defense -capable version, was deployed in 2003 in support of Operation Iraqi Freedom, where it intercepted several ballistic missiles.⁴⁴

In compliance with the Secretary of Defense guidance, the PATRIOT program was transferred from the Army to MDA when MDA was initially established in 2002. However, since PATRIOT had been developed by the Army using the traditional acquisition process, it was easily transferred back to the Army in 2003 by joint agreement, the details contained in a joint memorandum.⁴⁵ The Army is responsible for production and further upgrades of the PAC-3. MDA remains responsible for PAC-3 configuration management, sustaining engineering, and overall integrations of PAC-3 with the BMDS architecture. As agreed to in the MDA/Army overarching MOA, the previous agreement will be updated and revised to reflect current status.

ENDNOTES:

¹ George W. Bush, “National Security Presidential Directive on Ballistic Missile Defense,” National Security Presidential Directive/NSPD-23 (Washington, DC: Office of the President, December 16, 2002).

² “Missile Defense: The First Sixty Years.” (Washington, DC: Missile Defense Agency, August 15, 2008), 1.

³ “V2,” in *Wikipedia*. 2010. <http://en.wikipedia.org/wiki/V-2/> (accessed on February 5, 2010)

⁴ “Missile Defense: The First Sixty Years.” (Washington, DC: Missile Defense Agency, August 15, 2008), 2.

⁵ “Missile Defense: The First Sixty Years.” (Washington, DC: Missile Defense Agency, August 15, 2008), 5.

⁶ “US Policy on Continental Defense.” National Security Council/NSC 5802/1 (Washington, DC: US National Security Council, February 19, 1958).

⁷ “Missile Defense Timeline,” in *Missile Defense Agency 2009*.
<http://www.mda.mil/mdalink/html/milestone/html/> (accessed on February 5, 2010)

⁸ “Missile Defense: The First Sixty Years.” (Washington, DC: Missile Defense Agency, August 15, 2008), 12.

⁹ “Weapons of Mass Destruction: A-135/ABM-3,” in *GlobalSecurity.Org*. 2010.
<http://www.globalsecurity.org/wmd/world/russia/abm3.htm> (accessed on February 5, 2010).

¹⁰ “Missile Defense: The First Sixty Years.” (Washington, DC: Missile Defense Agency, August 15, 2008), 14.

¹¹ “Historical Funding Missile Defense Agency, Fiscal Year 1985–2010,” in *Missile Defense Agency*. 2009. <http://www.mda.mil/global/documents/pdf/histfunds.pdf> (accessed on February 5, 2010).

¹² “National Missile Defense Act of 1999, Public Law 106-38,” (Washington, DC: 106th Congress, July 22, 1999).

¹³ “Missile Defense: The First Sixty Years.” (Washington, DC: Missile Defense Agency, August 15, 2008), 17.

¹⁴ George W. Bush, “National Security Presidential Directive on Ballistic Missile Defense,” National Security Presidential Directive/NSPD-23 (Washington, DC: Office of the President, December 16, 2002).

¹⁵ “The Missile Defense Program, 2009–2010,” August 3, 2009, VER 1.1.
http://www.mda.mil/global/documents/pdf/The_Missile_Defense_Program.pdf/ (accessed on February 5, 2010)

¹⁶ “Study on the Mission, Roles, and Structure for the MDA,” Institute for Defense Analysis, August 2008.

¹⁷ Ronald T. Kadish, Lt Gen, USAF, “Reorganization of the Missile Defense Program,” statement before the Strategic Forces Subcommittee of the Senate Armed Services Committee, Washington DC, March 13, 2002, p. 12.

¹⁸ E.C. Aldridge, Jr., “Memorandum from Undersecretary of Defense, Subject: Missile Defense Support Group,” February 13, 2002.

¹⁹ Donald H. Rumsfeld, “Memorandum from Secretary of Defense, Subject: Missile Defense Program Direction,” January 2, 2002.

²⁰ Timothy Biggs, “Blurring the Line Between R&D Operations, The Missile Defense Agency’s Acquisition Approach,” *Defense AT&L*, July–August 2005: pp. 24–27.

²¹ “Aegis BMD/SM-3 Fact Sheet,” in *Missile Defense Agency*. 2010.
<http://www.mda.mil/global/documents/pdf/aegis.pdf> (accessed on February 5, 2010).

²² “Missile Defense Agency,” Department of Defense Directive 5134.9 (Washington, DC: Department of Defense, October 9, 2004).

²³ Gordon England, “Memorandum from Deputy Secretary of Defense, Subject: Missile Defense Executive Board (MDEB),” March 15, 2007.

²⁴ David G. Ahern, Director, Portfolio Systems Acquisition, Office of the Under Secretary of Defense (Acquisition, Technology, and Logistics), statement before the House Armed Services Committee/Subcommittee on Strategic Force, March 26, 2009. p. 7.

²⁵ Gordon England, “Memorandum from Deputy Secretary of Defense, Subject: Ballistic Missile Defense System (BMDS) Life Cycle Management Process,” September 25, 2008.

²⁶ David G. Ahern, Director, Portfolio Systems Acquisition, Office of the Under Secretary of Defense (Acquisition, Technology, and Logistics), statement before the House Armed Services Committee/Subcommittee on Strategic Force, March 26, 2009, pp. 9–10.

²⁷ “John Warner National Defense Authorization Act for Fiscal Year 2007, Public Law 109-364,” Washington, DC: 109th Congress, October 17, 2006.

²⁸ Patrick J. O’Reilly LTG, USA, Director, Missile Defense Agency, “DRAFT Memorandum from Director, Missile Defense Agency, Subject: Missile Defense Agency/Army Overarching Memorandum of Agreement,” February 3, 2010.

²⁹ Patrick J. O’Reilly, LTG, USA, Director, Missile Defense Agency, statement before the House Armed Services Committee, April 2, 2009, p. 25.

³⁰ David Cook, COL, USA, “Army Service Cell Stand Up,” Briefing to Army/MDA Board of Directors, November 24, 2009.

³¹ “MDA/Army BoD Meeting”, Briefing Chart from Missile Defense Agency, January 2009.

³² David G. Ahern, Director, Portfolio Systems Acquisition, Office of the Under Secretary of Defense (Acquisition, Technology, and Logistics), statement before the House Armed Services Committee/Subcommittee on Strategic Force, March 26, 2009, p. 4.

³³ David G. Ahern, Director, Portfolio Systems Acquisition, Office of the Under Secretary of Defense (Acquisition, Technology, and Logistics), statement before the House Armed Services Committee/Subcommittee on Strategic Force, March 26, 2009, p. 6.

³⁴ David G. Ahern, Director, Portfolio Systems Acquisition, Office of the Under Secretary of Defense (Acquisition, Technology, and Logistics), statement before the House Armed Services Committee/Subcommittee on Strategic Force, March 26, 2009, p. 8.

³⁵ “National Defense Authorization Act for Fiscal Year 2008, Public Law 1106-181,” (Washington, DC: 110th Congress, January 28, 2008). Sec 223.

³⁶ Patrick J. O’Reilly, LTG, USA, Director, Missile Defense Agency, statement before the Senate Armed Services Committee, June 16, 2009, p. 2.

³⁷ Patrick J. O’Reilly, LTG, USA, Director, Missile Defense Agency, statement before the Senate Armed Services Committee, June 16, 2009, pp. 27–28.

³⁸ 2010 Ballistic Missile Defense Review, (Washington, DC: Department of Defense, February 2010). 43.

³⁹ Patrick J. O’Reilly LTG, USA, Director, Missile Defense Agency, “DRAFT Memorandum from Director, Missile Defense Agency, Subject: Missile Defense Agency/Army Overarching Memorandum of Agreement,” February 3, 2010, p. 3.

⁴⁰ “THAAD Fact Sheet,” in *Missile Defense Agency*. 2010.
<http://www.mda.mil/global/documents/pdf/thaad.pdf> (accessed on February 5, 2010).

⁴¹ Patrick J. O’Reilly, LTG, USA, Director, Missile Defense Agency, statement before the Senate Armed Services Committee, June 16, 2009, p. 16.

⁴² “AN/TPY-2 Fact Sheet”, in *Missile Defense Agency*. 2010.
http://www.mda.mil/global/documents/pdf/an_tpy2.pdf (accessed on February 5, 2010).

⁴³ “GMD Fact Sheet”, in *Missile Defense Agency*. 2010.
<http://www.mda.mil/global/documents/pdf/gmdfacts.pdf> (accessed on February 5, 2010).

⁴⁴ “PATRIOT PAC-3 Fact Sheet,” in *Missile Defense Agency*. 2010.
<http://www.mda.mil/global/documents/pdf/pac3.pdf> (accessed on February 5, 2010).

⁴⁵ “PATRIOT Advanced Capability-3 (PAC-3) Transfer and Medium Extended Defense System (MEADS) Realignment Plan,” Joint MDA/US Army Memorandum, February 5, 2003.

